

AMENDMENTS TO THE SPECIFICATION:

Please replace the Title of the invention with the following Title:

METHOD AND APPARATUS FOR GENERATING SOUNDS IN A VIDEO GAME

Please amend the paragraph beginning at page 1, line 6, as follows:

The present invention illustrative exemplary non-limiting implementations
disclosed herein generally relate relates to a game apparatus storing a game sound
control program capable of displaying game objects and producing sounds associated
with a plurality of sound generating objects and a method for generating sounds game
sound control method thereof. More specifically, the present invention exemplary
implementations disclosed herein relate to a game video-graphics gaming
method and apparatus, the game apparatus being provided with an operating means a
mechanism for inputting game operating information by a player, proceeding a game
and for advancing game play action according to an operation of the operating means a
controller, and method for displaying a game screen including at least two or more
sound generating game objects, [[and]] producing a sound sounds associated with the
game screen objects, and a game control method thereof, and a storage medium that
stores [[a]] game sound data and program instructions for generating game object
sounds control program.

[Signature]
12/17/07
Please amend the paragraph beginning at page 1, line 17, as follows:

Generally, in a game developed played in a virtual 3D (three-dimensional) space, in [[case]] a situation where a virtual sound generating object such as, for example, a torch that produces a burning sound is displayed, for example, when a game character (e.g., a player displayed character[()]) operated controlled by a human player) approaches the sound generating object, a process is implemented whereby the in which a burning sound of the torch becomes bigger is carried out louder. At this time, if a plurality of [[the]] torches exist around the player game character (in the three-dimensional game space), a, by making a plurality of sound generation sources equal to the number of [[the]] torches [[sound]] around the game character are needed to

produce burning sounds of all of the torches are generated. However, in a case that the situation where the number of [[the]] sound sources that needs to be sounded produced exceeds [[the]] a maximum number of the sounds capable of generating sounds being generated simultaneously by the game processor, by making a torch existing at a distant place not generate a sound in accordance with priority, thereby saving the number of the sound sources then the total number of sounds needing to be produced is reduced by purposefully not generating sounds from one or more of the sound generating objects, which may be prioritized, for example, according to the virtual 3D distance from the game character.

*AS
12/nb* Please amend the paragraph beginning at page 2, line 24, as follows:

Furthermore, in such [[the]] a game, if the torch exists, for example, at a front oblique right ~~of a position on the display screen, while in order that~~ it is processed as if the sound of the torch were heard from the oblique right, a right volume component of the sound source is increased and a left volume component is decreased. In addition, if [[it is]] the game processor is capable of processing a surround sound component, it is possible to carry out implement a sound generation process in such a manner that the sound of the torch is generated sounds may be heard as though originating from behind the human operator/player and, thus, the operator/player is "surrounded" by the so generated sounds.

Please amend the paragraph beginning at page 2, line 5 as follows:

One example of the prior art is disclosed in, for example, Japanese Patent Laying-open No. 2000-13900 [International classification:H04S 7/00, G10K 15/00] laid-open on January 14, 2000. In a sound reproducing apparatus of this prior art, it is assumed that a position of [[a]] the head of a listener is the origin[.,] and, accordingly, all the arranged sound objects are divided into several groups by a rotating axis that rotates about an axis extending toward a front side of the listener by a predetermined degree, and a sound of one or a plurality of sound object(s) included in [[one]] each group is generated by using only a single sound producing source.

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Please amend the paragraph beginning at page 2, line 16 as follows:

In a case [[that]] where the total number of [[the]] activated sound sources is reduced [[saved]] by assigning [[the]] a distance based priority scheme, as in the former example, there [[is]] may be a problem that [[if]] a sound that is not so important, but rather is to be heard as an ambient sound within a predetermined [[of a]] sound field (virtual three-dimensional space), such as an ambient sound is that sound may become muted. [[a]] If that happens, a certain liveliness of the game is also lost. Furthermore, during game play, when, for example, [[the]] torches exist on both the right and the left of the game character, if only the sound of the right torch is muted, it feels somewhat strange that only the burning sound [[of]] from the left torch is heard, irrespective of the existence of both right and left torches.

12/11/07

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Please amend the paragraph beginning at page 2, line 22 as follows:

In addition, in the latter example, in order to determine a direction [[in]] for dividing the plurality of sound objects, it is necessary to evaluate a degree the angle toward a location or position at which the sounds are to be collected regarding all for each of the objects that produce the sounds. Therefore, a calculating process Consequently, the number of computations needed for processing sounds from all sound source objects in this case becomes huge, and thus [[its]] the processing load on the game processor is large. This leads to a problem that [[a]] unwanted [[delay]] delays in [[an]] the essential game process processing may occur.

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Please amend the paragraph beginning at page 3, line 8 as follows:

Therefore, it is a primary object of the present invention One aspect of the illustrative exemplary non-limiting implementation of the game apparatus disclosed herein is to provide a novel game apparatus that stores a game sound control program and a game sound control method thereof, and a storage medium.

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Please amend the paragraph beginning at page 3, line 8 as follows:

It is another object of the present invention Another aspect of the exemplary non-limiting implementation of the game apparatus disclosed herein is to provide a storage

medium, a game sound control method, and a game apparatus that stores a game sound control program, which are capable of efficiently using a sound source.

[Signature]
12/17/07
Please amend the paragraph beginning at page 3, line 13 as follows:

A storage medium according to the present invention One illustrative exemplary non-limiting implementation of the game apparatus disclosed herein includes a storage medium which stores [[a]] game sound control program instructions, and the game sound control program [[is]] instructions are executed by a processor of a game apparatus. The game apparatus also [[which]] comprises [[an]] a game operating means, [[an]] a game object data storing means, an image display control means, a sound waveform data storing means, a sound producing position storing means, and a microphone data storing means. In [[the]] this example game apparatus, the game operating means (e.g., a hand-held controller device) inputs allows imputing game operating control information by a human player. The object storing means stores objects constituting a game image. The image display control means displays the game image including at least the two objects based on the operating information input by the game operating means by the player. The waveform data storing means stores at least one kind of waveform data corresponding to the sound produced by at least the two sound objects constituting the game image. The sound producing position storing means stores sound producing position data indicating a producing position at which the sound is reproduced for each sound object. Furthermore, the microphone data storing means stores microphone data including sound collecting position data indicating a position at which the sounds are to be collected at least during the game.

Please amend the paragraph beginning at page 4, line 4 as follows:

The game sound control program is constituted of a includes sound volume data calculating program computing instructions, [[a]] sound volume component dividing program instructions, [[an]] object classifying program instructions, and [[a]] sound outputting program instructions. The sound volume data calculating program calculates instructions compute sound volume data of the sounds respectively produced by at least two sound objects based on both the sound producing position data and the

microphone data. The sound volume component dividing program instructions divides the sound volume data calculated computed by the sound volume data calculating program instructions into the sound volume component data of at least two directions. The object classifying program classifies instructions classify, out of all the sound objects, the object producing the same sound. Furthermore, the sound outputting program extracts instructions extract the maximum sound volume component data for each component of at least two directions regarding the object producing the same sound, and outputs the sound based on the waveform data of the object and the maximum sound volume component data of each component.

AB
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Please amend the paragraph beginning at page 4, line 17 as follows:

As illustrated by the example implementation shown in Figure 1, a game ~~More specifically, to the game apparatus (12) is connected to game (12: reference numeral corresponding to a component in the detailed description of the preferred embodiments described later, and so forth), the operating means (16, 22) for inputting [[the]] game operating and control information by the player is connected. [[The]] In this example, game display screen image (80) including includes at least two objects based on the operating information is which are displayed by [[the]] an image display control [[means]] ([[63]]) 46, S11).~~ The data for displaying objects (82, 84, 88) constituting this game image (80) are stored in the object storing means main memory (40). At least two objects constituting the game image (80) are [[the]] sound objects (84, 88) that produce a sound, for example, and at least one kind of the waveform data corresponding to the sound produced by the sound objects (84, 88) is stored in [[the]] a waveform data storing [[means]] memory (54). In addition, the sound producing position data (722b, 726b, 730b) indicating a producing position of the sound for each sound object (84, 88) is stored in the sound producing position storing means main memory (40). Furthermore, the microphone data including sound collecting position data (74a) indicating a position at which the sound is to be collected at least during the game is stored in the microphone data storing means area (74) of main memory (40). By the processor of the game apparatus thus constituted, the Thus, the game sound control program is executed by the game apparatus processor to enable control of game sound

during game play. More specifically For example, the sound volume data calculating program instructions (36, S311) calculates computes sound volume data [[of]] for the sound generated by the sound objects (84, 88) on the basis of both the sound producing position data (722b, 726b, 730b) and the microphone data. Then, the sound volume component dividing program instructions (36, S43) divides divide the sound volume data calculated computed by the sound volume data calculating program instructions (36, S31) into the sound volume component data of at least two directions. The object classifying program (36, S39) classifies, out of all the sound objects (84, 88), the object producing the same sound. If the objects are classified, the sound outputting program (36, S49, S51, S53) extracts the maximum sound volume component data for each component of at least two directions regarding the objects producing the same sound, and outputs the sound based on the waveform data of the objects and the maximum sound volume component data for each component. That is, the sounds produced by the classified objects are made up.

12/17/07 ¹²
Please amend the paragraph beginning at page 5, line 20 as follows:

~~According to the present invention~~ In one exemplary non-limiting implementation, the sound regarding the same kind of the sound object is output by only a single sound-production of the sound source, thus it is possible to more effectively use the sound source.

¹⁵
Please amend the paragraph beginning at page 5, line 24 as follows:

In a certain embodiment, another example implementation disclosed herein, the sound outputting program includes a instructions include sound calculating program computing instructions which calculates compute localization data and sound volume data of the sound to be output based on the maximum sound volume component data. More specifically For example, [[the]] -sound outputting program instructions generate (compute) (36, S53) generates (calculates) the localization data and the sound volume data of the sound to be output on the basis of the extracted maximum sound volume component data so that it is possible to output the sound produced by the classified sound objects by only the a simple sound-production of the sound source.

Please amend the paragraph beginning at page 5, line 23 as follows:

In another embodiment example implementation, the microphone data further includes sound-collection direction data indicating a direction from which the sound is to be collected during the game play, and the sound volume component dividing program divides instructions divide, based on the sound producing position data and the sound-collection direction data, the sound volume data of the sound object into right sound volume data, left sound volume data, and surround sound volume data. More specifically For example, the microphone data further includes the sound-collection direction data (74b) indicating a direction from which the sound is to be collected while the game is being played so that the sound volume component dividing program instructions (36, S43) [[is]] are capable of dividing the sound volume data of the sound object into the right sound volume data, the left sound volume data, and the surround sound volume data on the basis of the sound producing position data (722b, 726b, 730b) and its sound-collection direction data (74b).

*AKR
12/17/07*
Please amend the paragraph beginning at page 6, line 10 as follows:

In a certain one aspect, [[an]] a set of object sound localization calculating program game apparatus processor instructions for calculating computing the localization of one sound based on the sounds of at least [[the]] two sound objects from the sound producing position data and the microphone data is further provided, and the sound volume component dividing program divides instructions divide the sound volume data of the sound object into the right sound volume data, the left sound volume data, and the surround sound volume data based on the localization of the sound calculated as computed by the object sound localization calculating program instructions. More specifically For example, the object sound localization calculating program calculation instructions (36, S33) calculates compute the localization of one sound based on the sound of at least [[the]] two sound objects from the sound producing position data (722b, 726b, 730b) and the microphone data. This enables the sound volume component dividing program instructions (36, S43) to divide the sound volume data of the sound object into the right sound volume data, the left sound volume data, and the

surround sound volume data based on the localization of the sound calculated
computed by the object sound localization calculating program calculation instructions
(36, S33).

12/1/07 6 24
Please amend the paragraph beginning at page 7, line 8 as follows:

In a preferred embodiment yet another example implementation, the sound producing position data includes position data of a sound object being a point represented by [[one]] a single coordinate [[data]], and position data of the sound object having rail data defined by at least two ~~coordinate data~~ coordinates, and [[a]] near coordinate calculating program calculation instructions for calculating computing a position existing on a line connecting coordinates indicating the rail data and most close to the sound collecting position data regarding the sound object having said rail data is further provided. The sound volume data calculating program calculates instructions compute the sound volume data of the sound object from the coordinate data calculated computed by the near coordinate calculating program calculation instructions and the sound-collection position data when calculating computing the sound volume data of the sound object having the rail data, and the sound volume component dividing program instructions divides the sound volume data into the right sound volume data, the left sound volume data, and the surround sound volume data on the basis of the coordinate data calculated computed by the near coordinate calculating program calculation instructions and the sound collecting position data.

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Please amend the paragraph beginning at page 7, line 21 as follows:

More specifically For example, the sound producing position data (722b, 726b, 730b) includes the position data (722b, 726b) of the sound object represented by one coordinate data, and the position data (730b) of the rail data sound object represented by the rail data defined by at least two coordinate data. The near coordinate calculating program calculation instructions (36, S63) calculates compute the coordinate data existing on the line connecting the coordinates indicating the rail data, and of the position most close to the sound collecting position data (74a) regarding the sound object (88) having the rail data. The sound volume data calculating program calculation

instructions (36, S31) calculates compute the sound volume data of the sound object (88) from the coordinate data calculated computed by the near coordinate calculating program calculation instructions (36, S63) and the microphone data when calculating computing the sound volume data of the sound object having the rail data. That is, by calculating In other words, by computing the volume of the sound based[[,]] on the assumption that the sound of the sound object exists on the line of the rail data and at the position most close closest to the sound collecting position data (74a), [[and]] the number of [[the]] sound production by the sound producing sources can be reduced. Therefore Consequently, the sound volume component dividing program instructions (36, S43) divides, when dividing the sound volume data of the sound object (88) having the rail data into components divide, the sound volume data into [[the]] right sound volume data, [[the]] left sound volume data, and the and surround sound volume data on the basis of [[the]] coordinate data calculated computed by the near coordinate calculating program calculation instructions (36, S63) and the sound collecting position data (74b). That is In other words, the rail data defined by at least two coordinate data is considered as the sound of the sound objects, and thereby, the number of the sound production by the sound sources producing sounds is reduced[[,]]. Thus, it becomes [[thus]] possible to handle this [[case]] situation as the same as though it were a case [[that]] wherein a plurality of [[the]] sound objects are represented by [[one]] a single coordinate data [[exist]].

*CHP
12/17/07*
Please amend the paragraph beginning at page 8, line 19¹⁰ as follows:

A game sound control method according to the present invention Another aspect of the exemplary non-limiting implementation of the game apparatus disclosed herein is a method for controlling game sound control method of a game apparatus during game play which comprises an operating means for inputting operating information by a player; an object storing means for storing objects constituting a game image; an image display control means for displaying the game image including at least [[the]] two game objects based on the operating information, at least the two objects constituting the game image being sound generating objects that produce a sound; a waveform data storing means for storing at least one kind of waveform data corresponding to the sound

produced by the sound object; a sound producing position storing means for storing sound producing position data indicating a producing position of the sound for each sound object; and a microphone data storing means for storing microphone data including sound collecting position data indicating a position at which the sound is to be collected at least during the game, and comprises following steps of: (a) calculating sound volume data of the sounds respectively generated by the sound objects on the basis of both the sound producing position data and the microphone data; (b) dividing the sound volume data calculated by the computed in step (a) into [[the]] sound volume component data [[of]] corresponding to at least two directions; (c) classifying, out of all the sound objects, the object producing the same sound; and (d) extracting the maximum sound volume component data for each component of at least the two directions regarding the object producing the same sound, and outputting the sound based on the waveform data of the object and the maximum sound volume component data of each component.

*ss
12/17/07*
Please amend the paragraph beginning at page 9, line 15 as follows:

In [[this]] the exemplary non-limiting implementation of a game sound control method disclosed herein, similar to the example game sound control program disclosed herein, it is also possible to reduce the number of the sound generation sounds generated by the sound sources and, thus, possible to effectively use the available sound sources very efficiently.

Please amend the paragraph beginning at page 9, line 18 as follows:

~~A game apparatus according to the present invention~~ One illustrative exemplary non-limiting implementation of a game apparatus disclosed herein comprises an operating means for inputting operating information by a player, and is constructed to ~~precede a game advance game play~~ according to an operation of the operating means, display a game screen including at least two objects, and produce a sound related to the game screen. This example implementation of a game apparatus further comprises a waveform data storing means, a sound producing position data storing means, a microphone data storing means, a sound volume calculating means, a sound volume

component dividing means, a sound outputting means, an object classifying means, and a sound controlling means. The at least two objects are sound objects which generate a sound and the waveform data storing means stores at least one kind of waveform data corresponding to the sounds produced by the sound objects. The sound producing position data storing means stores sound producing position data indicating a producing position of the sound for each sound object. The microphone data storing means stores microphone data including sound collecting position data indicating a position at which the sound is to be collected at least during the game. The sound volume calculating means calculates the sound volume data of the sounds produced by the sound objects based on the sound producing position data and the microphone data. The sound volume component dividing means divides the sound volume data calculated by the sound volume data calculating means into sound volume component data of at least two directions. The sound outputting means outputs the sound based on the waveform data and the sound volume component data. The object classifying means classifies, out of all the sound objects, the object objects that produces produce the same sound. Furthermore, the sound controlling means extracts, regarding the object objects that produces produce the same sound, maximum sound volume component data into each component individual components of at least the two directions, and transfers to the sound outputting means the waveform data of the object and the maximum sound volume component data of each component.

*AS
12/17/07* Please amend the paragraph beginning at page 10, line 19 as follows:

In this game apparatus, similar to the game sound control program, it is also possible to reduce the total number of the sound production sounds produced by the sound sources and, thus, it is possible to more effectively use the available sound sources.

Please amend the paragraph beginning at page 10, line 22 as follows:

According to the present invention another aspect of the illustrative exemplary non-limiting implementation disclosed herein, since the sound regarding sounds generated by the same kind of [[the]] sound object [[is]] are combined brought together

into one, it is possible to make more efficient effectively use of the available sound sources.

dk
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Please amend the paragraph beginning at page 11, line 4 as follows:

Furthermore, according to the present invention another aspect of the illustrative exemplary non-limiting implementation disclosed herein, when making configuring/setting up the sound sources ~~up one~~, it is possible to [[bring]] combine sounds from several of them into one without resulting in evoking any strange feeling sensations in the operator/player, and therefore, the operator/player is free from spared from experiencing strange or unnatural feeling feelings while efficient use is made of the sound sources are efficiently used.

Please amend the paragraph beginning at page 11, line 5 as follows:

The above described objects and other objects, features, aspects and advantages of the present invention illustrative exemplary non-limiting implementations disclosed herein will become more apparent from the following detailed description of ~~the present invention~~ when taken in conjunction with the accompanying drawings.

Please amend the paragraph beginning at page 11, line 12 as follows:

Figure 1 is an illustrative view ~~of an~~ showing one example of a game system of ~~the present invention~~ exemplary non-limiting implementation of a game system apparatus;

Please amend the paragraph beginning at page 11, line 18 as follows:

Figure 4 is an illustrative view showing structure of game processor instruction components a sound control processing program shown in Figure 3;

Please amend the paragraph beginning at page 11, line 20 as follows:

Figure 5 is an illustrative view showing an example arrangement of data stored in an object data storing area shown in Figure 3;

Please amend the paragraph beginning at page 12, line 17 as follows:

Figure 14 is a flowchart [[shown]] showing a portion of a sound control process of the CPU shown in Figure 2;

12/17/07
Please amend the paragraph beginning at page 12, line 23 as follows:

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS EXAMPLE IMPLEMENTATIONS SHOWN IN THE DRAWINGS

Please amend the paragraph beginning at page 25, line 22 as follows:

Therefore, in this embodiment example implementation, in [[a]] the case [[that]] where the same kind of a plurality of [[the]] sound objects exist on the game screen 80, [[the]] a sound is output by only a single sound-production in the sound source, thus saving the available resources of the sound source to be used is saved. That is Accordingly, the available resources of the sound source [[is]] are used more effectively.

Please amend the paragraph beginning at page 32, line 7 as follows:

It is noted that in this embodiment example implementation, although detailed descriptions regarding the generating process of the game image are omitted, contents of the descriptions are described in detail in prior-filed Japanese Patent Publication 2002-161148 by the inventor, for example.

Please amend the paragraph beginning at page 36, line 4 as follows:

In addition, in this embodiment example, the sound produced by a plurality of the sound objects of the same kind are output by the single sound-production of the sound source so that, after obtaining the maximum values of the L, R and SR components, the sound volume data and the localization data are calculated using the same. However, the obtained maximum values may be directly applied (transferred) to the DSP 52. This, too, allows to bring into one the sound produced by a plurality of the sound objects of the same kind, thus possible to reduce the number of sound-productions of the sound source to be used.

Please amend the paragraph beginning at page 36, line 28 as follows:

According to this embodiment one aspect of this example implementation, the sound of a plurality of the objects of the same kind are output by the single sound-production of the sound source so that it is possible to use less resources of the sound source. That is, it is possible to effectively use the sound source. In addition, the sound source is not deleted according to the priority order, thus not deteriorating the liveliness of the game.

*AS
12/17/87*
Please amend the paragraph beginning at page 36, line 16 as follows:

It is noted that in this embodiment example, in a case that a plurality of the sound objects of the same kind exist, these sound objects are brought into the single sound-production at the sound source, thus using less sound source. However, even in a case that the sound source is used less, when the number of sound-productions of the usable sound source is exceeded, according to the priority order data (see Figure 5) included in the data of the sound object, the sound of the sound object not to be output is determined. However, as described above, the priority order of the sound object that brings the sound-production of the sound source into one is set high, and the sound is always output.

Please amend the paragraph beginning at page 36, line 14 as follows:

Furthermore, in this embodiment example, in a case that the sound object producing the sound of the same kind exists irrespective of the number of sound-productions of the sound source, these are brought into one. However, only in a case that the number of the sound objects exceeds a predetermined number, the same kind of the sound may be brought into one sound-production of the sound source.

Please amend the paragraph beginning at page 36, line 19 as follows:

Furthermore, in this embodiment example, descriptions are only given to the video game apparatus as shown in Figure 1. However, it is needless to say that the present invention illustrative exemplary non-limiting implementations disclosed herein are [[is]] applicable to another game apparatus or a portable game machine or a DVD

player, and etc., that produce the sound produced by the sound object displayed on the monitor by a sound processor such as the DSP using the sound waveform data.

*and
12/n/07*
Please amend the paragraph beginning at page ³⁶~~37~~, line ²⁴~~22~~ as follows:

Still furthermore, in this embodiment example, a case of being provided with only right and left speakers, or a case of being further provided with the surround speaker is described. However, two speakers are sufficient if capable of outputting the sound at least in two directions. In addition, four or more speakers may be provided. Furthermore, in a case of calculating the component of the sound volume, as shown in the above embodiment, it is desirable to calculate according to the number of the speakers.

Please amend the paragraph beginning at page ³⁷~~38~~, line ⁵~~3~~ as follows:

Furthermore, in this embodiment, as the sound objects example, only the torch, the river and, the wave sound objects are described. However, [[the]] sound objects are not necessary limited thereto to these example alone.

Please amend the paragraph beginning at page ³⁷~~38~~, line ⁷~~5~~ as follows:

Although the present invention illustrative exemplary non-limiting implementations disclosed herein have [[has]] been described and illustrated in detail, it is clearly understood that the same is by way of illustration and example only and is not to be taken by way of limitation, the spirit and scope of the present invention applicants' invention being limited only by the terms of the appended claims.